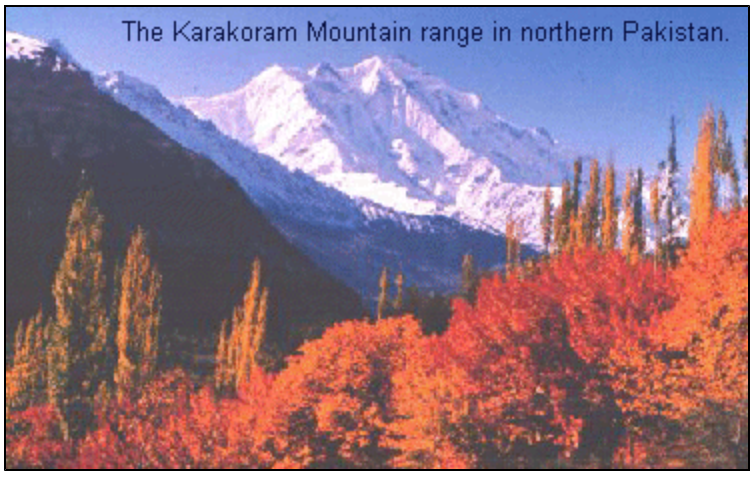
August 2003

Pakistan: Environmental Issues

Introduction

Ineffective natural resource management over many years and continuing high population growth each have had a negative impact on Pakistan's environment. Agricultural runoff exacerbated by ongoing deforestation and industrial runoff have polluted water supplies, factory and vehicle emissions have degraded air quality in the urban centers. Similar to other developing countries, Pakistan has focused on achieving self-sufficiency in food production, meeting energy demands, slowing population growth, and increasing economic growth rather than on curtailing pollution or other environmental hazards. As a result, "green" concerns have not been the government's top priority.

Yet, as Pakistan's cities suffer from the effects of air pollution and unplanned development has caused degradation, environmental issues have become more salient. Safeguarding public health, as well as preserving Pakistan's natural wonders, has made environmental protection increasingly important. In an attempt to redress the previous inattention to the nation's mounting environmental problems, in 1992 the government issued its National Conservation Strategy Report (NCSR).


The Karakoram Mountain range in northern Pakistan.

Building on the Pakistan Environmental Protection Ordinance of 1983, the NCSR stipulated three goals for the country's environmental protection efforts: (1) conservation of natural resources; (2) promotion of sustainable development; and (3) improvement of efficiency in the use and management of resources. Fourteen program areas were targeted for priority implementation, including energy efficiency improvements, renewable resource development/deployment, pollution prevention/reduction, urban waste management, institutional support of common resources, and integration of population and environmental programs.

In addition, in 1993 Pakistan instituted National Environmental Quality Standards (NEQS) on municipal and liquid industrial effluents and industrial gaseous emissions, motor vehicle exhaust, and noise. This attempt to legislate environmental protection has fallen short as regulations have not been enforced strongly. In addition, enforcement does not imply effectiveness, and even if

regulations were strictly enforced, many industries would be unable to comply. For instance when new environmental regulations were implemented in 1996, only 3% of industries were able to pass the test for compliance. National attention towards environmental issues has increased recently because, under provisions of a World Trade Organization (WTO) agreement, Pakistan will have difficulty after 2005 exporting products from industries without adequate environmental safeguards.

Following early successes in Pakistan's implementing its National Conservation Strategy, progress has stalled due to institutional failure on the part of the government policies and practices. In addition to policy ineffectiveness and corruption, Pakistan has not funded environmental protection efforts adequately. A January 2000 report released by the Ministry of Environment showed that Pakistan currently spends about $17 million per year on pollution-related cleanup; however, $84 million is needed to correct the country's environmental problems, and $1.8 *billion* per year in losses from environmental damage.

A lack of funding is evident in Pakistan's environmental protection efforts. The former government of Nawaz Sharif cited lack of funds as the reason for delay in establishing the Pakistan Environment Protection Council, an environmental protection watchdog group that the government had agreed to set up several years ago (but only recently established). However, the SDPI has estimated that the government allocates just 0.04% of the total public sector development program budget on the environment, and 70% of the funds for environment are loans from foreign lenders. The SDPI has estimated the staggering cost of environmental neglect in Pakistan as between 3%-5% of GDP, projected to reach 4%-8% by 2010.

The World Bank conducted a pilot project in the province of Balochistan in the late 1990s. The program was designed both to strengthen Balochistan's environmental protection institutions so they are better able to undertake their responsibilities and empower local communities to involve them in the design and implementation of natural resources' development and management. The project also worked to improve provincial natural resources use policies so that natural resources are used in an efficient and sustainable manner, publicize environmental issues, and implement to high priority operations and pilot programs to rehabilitate and develop damaged natural resources. The World Bank's pilot program was designed according to the objectives and strategies of the National Conservation Strategy. Although the World Bank's pilot program was partially successful, there have been no attempts to use the ideals of the program as a national model for protecting Pakistan's environment and managing its natural resources.

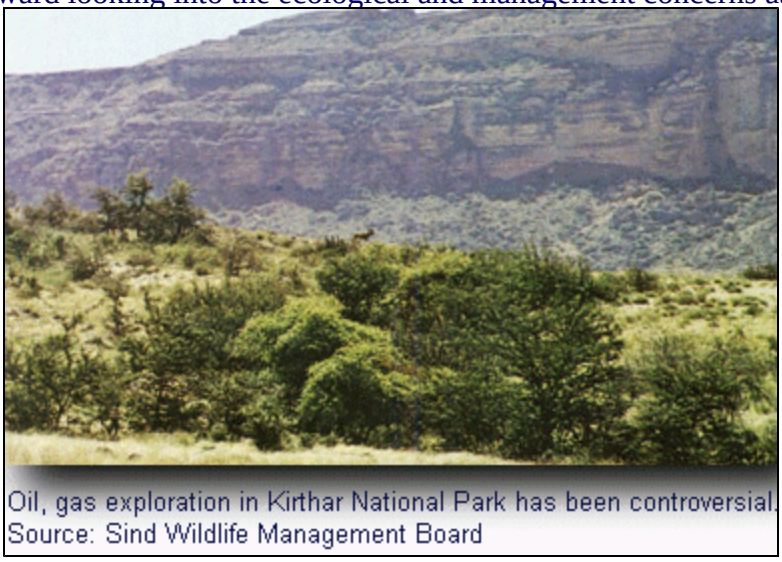
Oil and Gas Exploration in Kirthar National Park

Although Pakistan has the laws and regulations in place, its ability and commitment to protecting its environment has been questioned. Pakistan has tried to maintain the balance between developing its economy and preserving its natural wonders, but nevertheless, controversy erupted over former Prime Minister Nawaz Sharif's government's decision to allow oil and gas exploration in Kirthar National Park. The 1,192-square-mile park, which is about 90 miles northeast of Karachi, is the country's oldest national wildlife park, home to several rare or threatened species, including the Sindh Ibex, Urial sheep, and the chinkara gazelle.

The controversy first began in July 1997 when the Sharif government opened the park to prospectors, inviting British Premier Oil to search for an estimated 3 trillion cubic feet of gas believed trapped in the porous rock. Resistance from environmentalists kept the project dormant, and the Sind Wildlife Department turned down earlier requests by Premier's consultant to conduct an environmental impact assessment.

In May 1999, the regional Sind government and environmental groups, including the World

Wildlife Fund, reached an agreement by which a committee was formed to conduct an independent assessment of the park, with a view toward looking into the ecological and management concerns at Kirthar. In August 1999, while inviting tenders for parties interested in carrying out the environmental impact assessment, Pakistan's Ministry of Petroleum and Natural Resources went ahead and gave Premier Oil Exploration, Lasmo Oil, and Shell Exploration a license to explore for oil and natural gas.

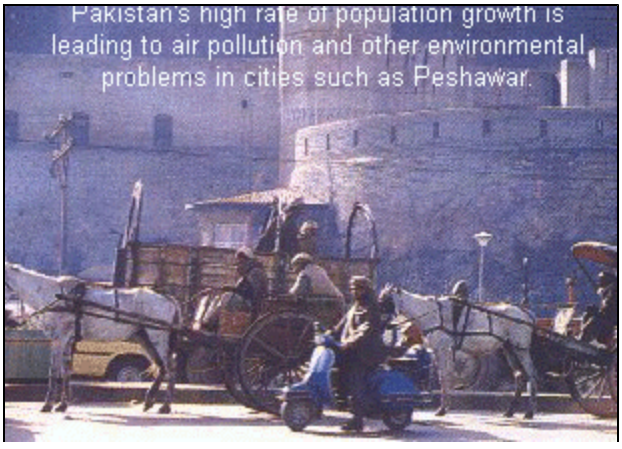

Oil, gas exploration in Kirthar National Park has been controversial.
Source: Sind Wildlife Management Board

Exploration is taking place in the Dumbar Block, which forms 95% of the area of the park. The Sustainable Development Policy Institute (SDPI), the country's leading environmental group, has stated that any mining or exploration in the park is illegal according to the provisions of the Sind Wildlife Ordinance (Amendment) Act of 1993, and that it would violate the country's international commitments to protect biodiversity made under the Convention on Biological Diversity. In 2000, environmental groups, including Friends of the Earth International sued Premier Oil to stop oil exploration. In October 2001, Pakistani courts dismissed the legal challenges because the country's environmental laws were changed while the case was being heard, making such exploration in a National Park legal. The issue is not yet resolved, however, as environmental groups are seeking to appeal to Pakistan's Supreme Court in Islamabad.

Air Pollution

The level of air pollution in Pakistan's two largest cities, Karachi and Lahore, is estimated to be 20 times higher than World Health Organization standards, and continuing to rise. Islamabad, the capital, is perpetually smothered by a thick cloud of smog that hides views of the Margalla Hills that tower over the city's tree-lined streets.

As industry has expanded, factories have emitted more and more toxic effluents into the air. Also, as in other developing countries, the number of vehicles in Pakistan has swelled in recent years--from 680,000 in 1980 to 5 million in 2003. The 1992 National Conservation Strategy Report claims that the average Pakistani vehicle emits 25 times as much carbon dioxide as the average U.S. vehicle, as well as 20 times as many hydrocarbons and more than 3.5 times as many nitrous oxides in grams per kilometer.


Pakistan's high rate of population growth is leading to air pollution and other environmental problems in cities such as Peshawar.

Cars are the leading source of air pollution that adversely affects Pakistan's economy and population. Economic damages from urban air pollution are estimated at about $370 million, with 6.4 million people hospitalized annually for air-pollution-related illnesses. A recent advertisement placed by the government in a newspaper warned, "Take care of your tune-ups before the poison in the air takes care of you."

Many Pakistani environmentalists say that poor

fuel quality is also to blame for the country's serious air pollution problems. Fuel consumption rose by 188% in Pakistan from 1980 to 1998, and gasoline continues to contain high levels of lead and sulfur. Unleaded gasoline was introduced in 2001, but many vehicles in Pakistan's major cities still use leaded gasoline. Various grades of gasoline sold contain about 350 mg/liter of lead--in comparison, leaded gasoline in other countries usually contains no more than 150 mg/liter. Dr. Asif Qayyum Qureshi, a research fellow at SDPI, claimed that the problem of air pollution largely could be solved if the government were to tighten its lax fuel quality standards.

The government's 1995 Clean Fuel Initiative was largely ineffective, and now authorities are looking at the possibility of using alternative fuels for vehicles. As of 2001, 200,000 cars were fitted to use compressed natural gas (CNG) which pollutes less than gasoline. The government has also set up 150 CNG fueling stations around the country, and is looking into converting diesel vehicles to CNG as well. Pakistan has investigated converting rickshaws to CNG through a pilot project with the Canadian International Development Agency (CIDA). Preliminary results suggest that converting rickshaws to CNG would bring considerable cost-savings for rickshaw owners and environmental benefits throughout Pakistan. Unfortunately, outside funding would be required to expand the program as the capital investment to convert rickshaws to CNG is beyond the reach of most rickshaw owners.

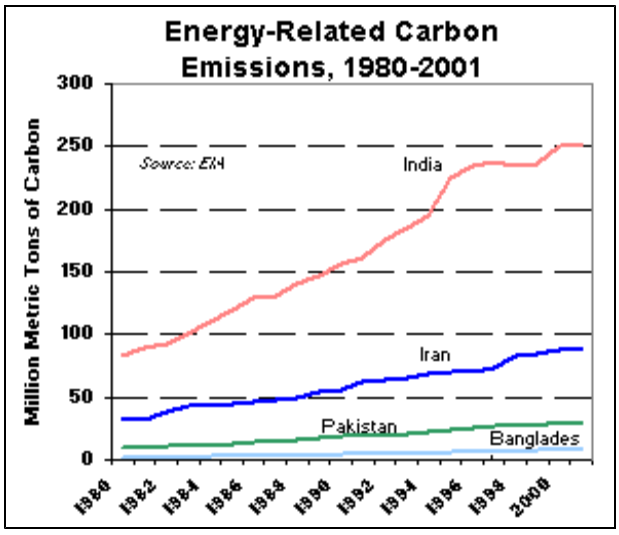
Energy Consumption

Pakistan's energy consumption has nearly tripled in the last 20 years, from 0.6 quadrillion Btu in 1980 to 1.9 quads in 2001. Still, Pakistan accounts for less than 0.5% of total world energy consumption.

In terms of per capita energy consumption, Pakistan's level of 12.9 million Btu in 2001 was higher than Bangladesh's (3.7 million Btu), but virtually on par with India's (12.6 million). In comparison, China's per capita energy consumption in 2001 was 30.9 million Btu, Iran's was 80.3 million Btu, and Russia's was 195.3 million Btu, while U.S. per capita consumption was 341.8 million Btu.

Carbon and Energy-Related Emissions

Pakistan's energy-related carbon emissions in 2001 totaled 29.2 million metric tons, nearly triple the 1980 level of 9.3 million metric tons. Yet, Pakistan accounts for only 0.4% of the world's carbon emissions, and its emissions are relatively low compared to its neighbors in the region. Iran's emissions, for instance, have climbed from 33.1 million metric tons of carbon in 1980 to 90.1 million metric tons in 2001, while India's carbon emissions have jumped from 82.2 million metric tons in 1980 to 251.3 million metric tons in 2001.



Because Pakistan, along with other developing countries, has argued that it needs to be free of emission ceilings in order to develop its economy, the country has not taken on any emission reduction commitments under the United Nations Framework Convention on Climate Change, nor is Pakistan a signatory to the Kyoto Protocol.

Pakistan's per capita carbon emissions in 2001

were 0.2 metric tons per person. In comparison, Bangladesh emitted 0.1 metric tons of carbon per person, while India's level was 0.25 metric tons per capita. China's per capita carbon emissions level in 2001 was 0.65, Iran's level was 1.4, and the U.S. value was 5.5 metric tons per person.

Most of Pakistan's carbon dioxide emissions were from oil (54.6%) while emissions from natural gas were 38.1% and emissions from coal (7.2%) accounted for the rest.

Energy and Carbon Intensity

Pakistan's energy intensity--energy generated per dollar spent--is high due to the inefficiencies of the state-run power sector in generating electricity and transmitting it across the national grid. Poor quality infrastructure, as well as power theft, means that Pakistan does not generate the amount of electricity it needs to, necessitating rotating blackouts in some areas. Although it is difficult to measure theft along transmission lines (as opposed to line loss), it is likely that theft is a significant contributor to Pakistan's 30% overall electricity loss rate.

In 2001 Pakistan's energy intensity stood at 33,600 Btu/$2001--more than triple the United States' energy intensity of 9,600 Btu/$2001. In comparison to its neighbors, Pakistan's level of energy intensity was significantly higher than Bangladesh's 2001 energy intensity of 11,300 Btu/$2001 but significantly lower than Iran's energy intensity (67,000 Btu/$2001). Pakistan and India (26,200 Btu/$2001) have similar energy intensities, both of which are lower than China's (34,200 Btu/$2001).

Pakistan's lack of coal reserves has kept the country's carbon intensity down, but the level is still high. Carbon emissions from vehicles are the main reason behind Pakistan's 2001 carbon intensity of 0.52 metric tons of carbon/thousand $2001. The comparable U.S. level of carbon intensity was 0.15. Although Iran (0.1.16) and China (0.72) were significantly higher than Pakistan's 2001 carbon intensity level, Pakistan's level is about the same as its neighbor India (0.51). Only Bangladesh (0.18) was lower than Pakistan in terms of carbon intensity in the south Asian region.

Renewable Energy

Renewable energy consumed in Pakistan in 1997 totaled 1,132 trillion Btu, a 1% increase from 1996. Hydroelectric power is an important domestic energy source, generating 28% of all electricity in the country, and a number of new sites are being developed. Although the mountainous north gives Pakistan much hydroelectric potential, difficulty of access and the high cost of transmission to the populous south make development of this potential a distant prospect. Nevertheless, the Pakistani government has started working on feasibility studies for the construction of more dams, with feasibility reports of at least five small dams expected to be completed by the end of 2000.

Indeed, some development of renewable energy sources has been undertaken precisely *because* of the population's difficulty of access. In order to provide electricity to rural areas that would otherwise not have electricity in the foreseeable future (because they are either too remote and/or too expensive to connect to the national grid), Pakistan is turning to solar power. Pakistan has worked with WorldWater, an American company, to install solar-powered water pumps that can help address the water needs of people in rural areas without electricity.

The government hopes that, by harnessing solar power for energy in rural areas, it will reduce villages' reliance on firewood. Pakistan is still shifting to modern energy sources, with firewood, dung, and bagasse (the woody residue left over from crushed sugarcane) making up one-third of all energy consumed in Pakistan as recently as 1988. Although Pakistan is an ideal physical environment for solar energy, many past projects have failed because systems needed maintenance after expert personnel had left. Studies are underway on how future solar projects can be sustained

at a local level by Pakistani villages.

Pakistan currently has two nuclear power plants, one near Karachi and the other at Chashma. The Karachi facility, which was built in 1965 with Canadian assistance, has demonstrated a poor operating record, which--in addition to concerns in the international community about Pakistan's possible use of nuclear material for weapons--has contributed to the lack of further development of the country's nuclear power sector. The Chashma Nuclear Power Plant was built with Chinese assistance and inaugurated in 2001. Pakistan is placing more emphasis on nuclear power to meet future energy needs and has begun talks with China over the development of a second facility at Chashma.

Pakistan in the 21st Century

The Pakistani government's current focus is on economic development and poverty allieviation. Like many developing countries, Pakistan has limited resources for addressing its environmental problems. Pakistan's previous environmental record is poor, and the country has not yet been able to back up its commitment to environmental protection with action. New developments in the World Trade Organization (WTO), however, stipulate that members can face higher tariff barriers for their exports in 2005 if certain basic environmental criteria are not met. Discussions are ongoing in Pakistani government and industry circles to meet the necessary requirements. It is clear that Pakistan will need to place greater emphasis on environmental protection in order to stem the country's environmental degradation and safeguard citizens' health.

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